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Original Research Article

Knowledge of glaucoma among patients of selected health facilities in Ondo state, Nigeria

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ABSTRACT

Background: Glaucoma is the leading cause of irreversible blindness globally hence, the need for individual to acquire knowledge of prevention, control and appropriate management. This study sought to assess the knowledge of glaucoma among patients of selected health facilities in Ondo state, Nigeria.
Methods: This research was a descriptive study. A total of 366 respondents selected randomly from the two health facilities in Ondo-state participated in the research. A self-structured questionnaire was used in collecting relevant data. Data were analyzed and level of significant was at p value 0.05.
Results: Out of a total of 366 respondents, females 216 (59%) dominate, the majority were aged between 21-30 years (20.8%). Above half (51.1%) had tertiary level of education. Participants' awareness (64.8%) and knowledge (49.7%) of glaucoma was good. Socio-demographic profiles had no relationship with level of knowledge of glaucoma.
Conclusions: The awareness and knowledge about glaucoma was fairly good among the patients in Ondo state. The study findings stress the need to enhance awareness and knowledge through public oriented glaucoma education. Also, appropriate patient education and planning might positively affect the patients' adherence to glaucoma medications.

Keywords: Glaucoma, Health facilities, Knowledge, Nigeria, Patients

INTRODUCTION

Glaucoma is a condition characterized by increased tension or pressure in the eye causing progressive structural or functional damage, optic nerve cupping and visual filed loss.[1] Glaucoma is the leading cause of irreversible blindness globally sadly; it shows no signs or symptoms until later stages. Therefore, the knowledge about the disease can influence the utilization of eye screening services.[2] The term glaucoma includes panoply of diseases which differ in their etiology, risk factors, demographics, symptoms, duration, therapy, and prognosis. From the pathophysiological and therapeutically point of view, intraocular pressure (IOP) is the cardinal modifiable risk factor, as the disease usually stops progressing if the IOP is lowered by 30% to 50% from baseline.[3]

In 2010, 60.5 million people were victims of glaucoma globally which is expected to rise to 111 million in 2040.[4] More than three million Americans are living with glaucoma; 2.7 million are aged 40 years and above affected by its most common form- open-angle glaucoma.[5] The situation is worse in Sub-Saharan Africa where poor awareness and knowledge further compounded the condition. Blindness due to glaucoma is highest in Africa especially Nigeria accounting for 15% of the global blindness.[6] There are estimated 1.2 million Nigerians aged 40 years and above with glaucoma.[6]

Early detection and timely treatment are important to avert the consequences from such silent thief of sight. If glaucoma is recognized early, vision loss can be slowed or prevented.[7] Preventing early blindness from glaucoma is not only a matter of saving individuals sight loss but also saving the economy as most cases occur among the productive age group.[8]

The knowledge of glaucoma and its treatment can play an important role in encouraging people to seek timely eye care and therefore, help in reducing the burden of visual impairment. A substantial improvement in awareness level would improve the rate at which this condition is diagnosed. Increasing awareness about glaucoma is important as the disease occur over a long period of time and is often diagnosed when the disease is quite advanced. Awareness on glaucoma helps to get better disease detection and patient compliance.[9]

Raising public awareness and knowledge about glaucoma is a key for early case identification and prevention of blindness. However, awareness and knowledge about glaucoma is unknown at community level, making provision of interventions difficult.[10] Therefore, this study was done to determine the knowledge of glaucoma among patients in selected hospitals in Ondo state, Nigeria and the effect of patient's socio-demographic factors on the level of knowledge of glaucoma.

METHODS

Study design

The study was a cross-sectional study.

Study location

The study was carried out in two selected health facilities in Ondo state- Federal Medical Centre Owo and Millennium Eye Centre University of Medical Science Teaching Hospital (UNIMED) Akure. The Federal Medical Centre, Owo is located along Adekunle Ajasin road, off Ikare Road, Owo Local Government Area, Ondo State, Nigeria. The hospital serves as a referral health care facility to many of the states (Ondo, Kogi, Edo, Ekiti and Osun states) of the federation because of its strategic location. The centre has about 300 beds with a bed occupancy rate of about 70%.[11] The ophthalmology clinic runs three times a week by three consultant ophthalmologists, four ophthalmology medical officers and six ophthalmology nurses.

The University of Medical Science Teaching Hospital is a tertiary hospital owned by the state government. The various facilities that made up the University of Medical Science Teaching Hospital Complex include the Medical Village which is made up of the Trauma Centre, Kidney Care Centre, Mother and Child hospital all located in Ondo town and the University of Medical Science Teaching Hospital, Akure annex. The ophthalmology clinic runs two times a week by two consultant ophthalmologist, three ophthalmology medical officers and six nurses.

Study duration

The study took place from January 2019 to December 2019.

Study population

The study population comprised of patients age 10 years and above attending the ophthalmology clinics of the two selected health facilities. The inclusion criteria were patients 10 years and above and both old and new patients attending the ophthalmology clinics while patients who did not give consent were excluded.

Sample size determination

The sample size was determined using the formula for estimation of proportion.[12]

$$n = \frac{Z^2Pq}{d^2}$$

Where n = desired sample size.

Z = Standard normal deviate corresponding to 5% level of significant = 1.96. P = proportion in the target population estimated to have a particular characteristic.

The prevalence of 65.0% for knowledge of glaucoma among eye patients in Zambia was used.[13]

P value of 65% = 0.65 was used.

q = proportion of middle aged women without depression (1 - 0.65 = 0.35).

d = degree of accuracy desired or maximum allowable margin of error. This has been estimated to be 0.05.

Based on the above information the sample size (n) for this study was arrived thus

$$n = \frac{1.96^2 \times 0.65 \times 0.35}{0.05^2}$$

=349.5

Adding 5% for non-response, a total of three hundred and sixty six (366) was obtained.

Sample and sampling technique

Simple random sampling method (ballot system) was employed in which numbers written on paper were given to participants, specific people with numbers written on

their ballot paper were selected for the research and those with plain paper were not recruited. This was used to select 204 (55.7%) participants at Federal Medical Centre, Owo and 162 (44.3%) participants at UNIMED Teaching Hospital Akure making a total of 366 participants. The research instrument was a structured questionnaire which comprises of closed questions designed to capture information about the demographics, awareness, and knowledge of glaucoma. It was designed to be brief and understandable and participants were asked to answer all questions to the best of their knowledge and most of the questions required "yes" or "no". The questionnaire was divided into five sections. Section A was on socio-demographic data; section B was to measure knowledge about glaucoma; section C was questions to measure awareness and treatment of glaucoma; section D focused on questions to measure knowledge on preventive practices and section E was to measure knowledge about treatment of glaucoma.

Reliability of the instrument was tested through pre-test method. The questionnaire was administered to 20 patients at State specialist hospital, Akure. The correlation analysis was done using Cronbach's alpha internal consistency coefficient and item-total correlations were used to determine reliability. The research instrument had Cronbach's alpha coefficient of 0.73.

Data collection

The researcher distributed the questionnaire directly to the respondent with the help of three trained research assistants. Data was collected for a period of 8 weeks during the clinic days. Subjects that were illiterate were assisted by the research assistants to select their chosen responses on the questionnaire. The questionnaires were cross-checked by the researcher within 24 hours for completeness and errors.

Data analysis

Data obtained from the administered questionnaire were coded and analyzed using the statistical package for social sciences (SPSS) version 22. Socio-demographic characteristics were analyzed using descriptive statistics frequency tables and percentages. Level of knowledge was presented in frequency and percentage. Inferential statistical tools chi-square and correlation coefficient was used to test hypothesis and relationship between variables at 5% level of significance.

Ethical consideration

Ethical clearance registration number FMC/OW/380/VOL.XCIII/47 was obtained from the Ethics and Research Committee of the Federal Medical Centre, Owo, Ondo State. Detailed but simple information about the research was provided to each respondent and written consent was obtained before recruitment.

RESULTS

A total of 366 subjects responded correctly to the questionnaire of which 216 (59.0%) were females with male to female ratio of 1:1.4, majority of them were aged 21-30 years (20.8%) followed by 51-60 years (16.7%). Above half 187 (51.1%) of them had tertiary education while only 19 (5.2%) were illiterate. Majority 304 (83.1%) were Yoruba and Igbo constitutes 16 (4.4%). On religion, Christians dominate 289 (79.0%). Greater than half of the participants 211 (57.7%) were married, 122 (33.3%) yet to marry whereas only 2 (0.5%) of them were divorcee. Interestingly, a good number of the participants 138 (37.7%) were self-employed and public servants comprise of 75 (20.5%). Majority lived in urban area 237 (64.8%). The socio-demographic characteristics of the respondents can be seen in Table 1.

Table 1: Socio-demographic characteristics of respondents.

Variables	Options	Frequency (n=366)	%
Gender	Male	150	41.0
	Female	216	59.0
Age (years)	11-20	50	13.7
	21-30	76	20.8
	31-40	46	12.6
	41-50	60	16.4
	51-60	61	16.7
	61-70	47	12.8
	71 and above	26	7.1
Educational level	No formal education	19	5.2
	Primary education	44	12.0
	Secondary/ technical education	116	31.7
	Tertiary education	187	51.1
Tribe	Yoruba	304	83.1
	Igbo	16	4.4
	Hausa	6	1.6
	Others	40	10.9
Religion	Christianity	289	79.0
	Islamic	66	18.0.
	Traditional	8	2.2
	Others	3	0.8
Marital status	Married	211	57.7
	Yet to marry	122	33.3
	Separated	6	1.6
	Divorced	2	0.5
	Widowed	25	6.8
Occupation	public service	75	20.5
	self employed	138	37.7
	Retiree	54	14.8
Residents	trainee/student	99	27.0
	Rural	129	35.2
	Urban	237	64.8

Table 2: Respondents knowledge of the features and treatment of glaucoma.

Variables	Frequency (n=366)	%
Symptoms of glaucoma		
Painless vision loss	93	25.4
Sudden vision loss	92	25.1
None of the above	16	4.4
I don't know	165	45.1
Risks factor of glaucoma		
Hereditary	73	19.9
Cataract	33	9.0
Eye infection	20	5.5
Multiple causes	20	5.5
Hypertension	13	3.6
Diabetes	8	2.2
Prolong use of glasses	5	1.4
Certain food	4	1.1
Certain drug like steroid	2	0.5
Don't know	188	51.4
Treatment of glaucoma		
Surgery	94	25.7
Eye drop	69	18.9
Eye drop and surgery	13	3.6
Multiple options	11	3.0
Pills	8	2.2
Laser	6	1.6
Spectacle	6	1.6
I don't know	159	43.4

Two hundred and thirty-seven respondents (64.8%) were aware of glaucoma while 129 (35.2%) were not aware of glaucoma. The respondents' level of knowledge of glaucoma showed that 182 (49.7%) had good knowledge while 184 (50.3%) had poor knowledge.

Table 2 shows the respondents knowledge of the features and treatment of glaucoma. The common symptoms of glaucoma known were painless vision loss (25.4%), sudden vision loss (25.1%) while a substantial number 165 (45.1%) could not identify any symptoms. About the risk for glaucoma, the major predisposing factor was hereditary (19.9%) followed by cataract 33 (9.0%) while steroid (0.5%) was the least. Although, more than half (51.4%) do not know the risk factors of glaucoma. The most common treatment option identified by the respondents was surgery 94 (25.7%) followed by eye drop 69 (18.9%). The use of eye drops and surgery combine was 13 (3.6%) while laser and spectacles were the least treatment option (1.6%).

Above average 198 (54.1%) thought that complications like blindness arising from glaucoma is preventable. Two hundred and thirty-three participants (63.7%) knew that regular eye check-up is a preventive measure for glaucoma. About two-third (65.3%) knew that early diagnosis could prevent glaucoma. Majority 235 (64.2%) knew that glaucoma can be prevented through early treatment. On knowledge of compliance to medication in combating glaucoma, reasonable number 226 (61.7%) agreed to the practice while 218 (59.6%) believed in supernatural power. On preventive practice, 190 (51.9%) have gone for eye checkup before while 79 (21.6%) have not. Amazedly, 97 (26.5%) do not know if they have gone for eye check-up before. Moving to diagnosis, only few 64 (17.5%) have been diagnosed of glaucoma. The knowledge of the glaucoma prevention and preventive practices among respondents can be seen in Table 3.

Table 3: Knowledge of the glaucoma prevention and preventive practices among respondents.

Variables	Frequency (n=366)	%
Blindness from glaucoma is preventable		
Yes	198	54.1
No	44	12.0
I don't know	124	33.9
Regular eye check-up		
Yes	233	63.7
No	19	5.2
I don't know	114	31.1
Early diagnosis		
Yes	239	65.3
No	16	4.4
I don't know	111	30.3
Early treatment		
Yes	235	64.2
No	20	5.5
I don't know	111	30.3
Compliance with medication		
Yes	226	61.7
No	27	7.4
I don't know	113	30.9
Belief in God		
Yes	218	59.6
No	35	9.6
I don't know	113	30.8
Have you had eye check-up done before?		
Yes	190	51.9
No	79	21.6
I don't know	97	26.5
Have you been diagnosed with glaucoma before?		
Yes	64	17.5
No	302	82.5

Table 4 shows the association between the level of knowledge of glaucoma and socio-demographic characteristics of the respondents. There was no statistically significant association between the socio-demographic characteristics (age, gender and occupation) of the respondents and the level of knowledge of glaucoma.

Table 4: Association between the level of knowledge of glaucoma and socio-demographic characteristics of the respondents.

Socio-demographic characteristics	Level of knowledge of glaucoma		χ^2	P value
	Good	Poor		
Gender				
Male	78	72	0.525	0.268
Female	104	112		
Age (in years)				
11-20	21	29	9.319	0.156
21-30	33	43		
31-40	25	21		
41-50	29	31		
51-60	30	31		
61-70	32	15		
71 and above	12	14		
Occupation				
Public service	37	38	2.007	0.571
Self employed	71	67		
Retiree	30	24		
Trainee/student	44	55		

DISCUSSION

In this study, females dominated with age between 21-30 years. Majority of them had tertiary education while only 19 (5.2%) were illiterate. Similar to this was noted in a study carried out in Ghana on awareness, knowledge and perception of risk of glaucoma among adults in a Peri-urban population.[14] Christians dominated and greater than half of the participants were married, a good number of the participants were self-employed and majority lives in urban area. Comparatively, related outcome was reported in Nigeria and Northwest Ethiopia.[15-17] This showed that it is very important to extend health education and advocacy to religious houses where people can get informed of this condition of glaucoma at grass root level. The rural dwellers that don't have the opportunity of coming to big hospital where eye check-up is being done should also be given opportunity of having their eye checked through planned health program.

The level of awareness found in this study was similar to levels reported in studies carried out in southeast Nigeria and India.[15,18] Nonetheless, this is surprising in Nigeria though, signifies the effort of the healthcare worker and mass media. While this was impressive, findings from other studies such as in Nigeria, Ghana, and Ethiopia have revealed minimal level of awareness of glaucoma even as low as 2.4%.[4,14,17,19] The awareness of glaucoma is good but the knowledge about the disease is poor therefore, there is need to improve on the enlightenment of the community about glaucoma through pamphlet that talk about glaucoma, the risk and possible intervention.

The current study has also revealed better level of knowledge (49.7%) about glaucoma compared to similar studies in India, Ethiopia (12.1%), South India (3.1%), and Ghana (27%).[20-23] This might be due to the difference methods used to measure knowledge across these studies. Although, another study in Ethiopia revealed akin result (49.6%) of the level of knowledge of glaucoma.[17] In Zambia, a study on awareness and knowledge of glaucoma among eye patients attending the university teaching hospitals revealed a high knowledge of glaucoma (64.5%).[13] This might be due to the similarity in socio-demographic characteristics of study participants and the study design.

A good number that participated in this study (59.6%) believes in supernatural power in preventing glaucoma. In Nigeria, Africa as a whole, illiterate and hopelessness arose from unscrupulous economy have made people depend on God for things that should not. A community-based study in Anambra State of Nigeria documented that people generally perceive eye diseases and blindness as being caused by evil spirits or enemy machination.[14] This could explain why the respondents in this current study had low perception of risk because of divine protection from their religious faith probably against evil spirits or the enemy.

The finding from this study revealed that hereditary was the major risk factor indicated by the respondents while 188 (51.4%) don't know any causes. A similar result was reported by United Nations in 2019 which found that 41% of patients with glaucoma were aware of a risk for glaucoma in their family members, even though 45% of their family members were not screened for glaucoma.[24] The proportion of people population who don't know the risk factor for glaucoma is high. Contrary to this, finding in Zambia where only 12.2% participants believed that a positive family history was a risk factor for glaucoma.[13] Providing information to patients with glaucoma regarding the heritability of glaucoma and necessity of screening is crucial. This would encourage patients to inform their family members regarding the prognosis of glaucoma and their higher chance of being affected by this blinding disease compared to the general population. Emphasis must be laid on importance of bringing their children and family member to the hospital for early detection.

This study revealed that many participants knew that regular eye check-up is a preventive measure for glaucoma. Similar result was reported from Osun state, Nigeria.[25] It is very likely people will perceive themselves not to be at risk of a disease like glaucoma that shows no symptoms for a long time. Awareness of these risk factors will prompt some people to seek eye care for early detection and prognosis. The perception that visual loss is a normal consequence of ageing could also be the reason for negative attitude towards the disease by some in this study population.

Above half of the participants knew that early diagnosis and treatment could prevent complication of glaucoma. This is true because early diagnosis and institution of treatment can result in reduction of visual impairment and blindness as the main cause of eventual blindness is a late presentation of the disease.

Reasonable number of the respondents in the present study believed that adhere to medication prevent glaucoma complication. This is contrary to a study in Ethiopia which reported that 67.5% of Ethiopian glaucoma patients did not adhere to prescribed medications.[26] Newman et al also reported that only about a third of patients with glaucoma fully adhere to their medical plan.[27] This indicates that more health education is needed for patients coming for eye examination which will help them to acquire some basic knowledge about the disease, possible treatment, compliance to treatment and follow up clinics should be emphasized.

This study demonstrated that socio-demographic characteristics such as sex, age and occupation did not influence the knowledge of glaucoma. In a comparable study in Zambia, no associations were found between gender, age and knowledge of glaucoma.[13] Also, a multivariate logistic regression analysis in another similar study showed that age and sex of the participants were not significantly associated with the knowledge of glaucoma.[28] However, another study revealed an association between age group and level of knowledge of glaucoma.[29]

The limitation of this study was the fact that some respondents could have given a socially acceptable answer to some questions. However, the findings from this study could be used in initiating a policy on glaucoma education and planning that might positively affect the patients' knowledge.

CONCLUSION

In conclusion, the level of knowledge of glaucoma was fairly low and one of the most important and effective actions for early detection of glaucoma and its management may be raising public awareness and knowledge levels regarding the disease. These findings suggest that there is a need for health education in Ondo state population to increase their level of awareness and knowledge of glaucoma. Inadequate knowledge in the general population may be an important cause for failure to detect glaucoma early and may result in blindness from the disease.

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